SERVICE MANUAL ST400

marantz

model ST400

Stereophonic Tuner

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ Company has created the ultimate in stereo sound. Only original MARANTZ parts can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ stereo are generally available within 72 hours throughout the nation via a toll-free line to our National Parts Depot in California. The sales professionals who take your call immediately refer to their own desk top computer terminal and can quickly determine the availability and price information you require. If for some reason, your order should exceed our available stock, we usually can instantly provide an alternate replacement part or current delivery information. When the order is placed and confirmed, the computer simultaneously generates "hard copy" orders at the distribution center. As hard copies come directly from the computer to the national parts depot, your requested stock is assembled and prepared for shipment and placed on the first available carrier for delivery to you.

ORDERING PARTS

Phone orders will eliminate mail delays, and we encourage the use of this method. If you order by mail, use MARANTZ parts order forms which are available from our National Parts Depot located at the following address:

SUPERSCOPE NATIONAL PARTS DEPARTMENT
20525 Nordhoff Street
Chatsworth, California 91311
Phone: 1-800-423-5108
1-213-998-9333

The following information must be supplied to eliminate delays in processing your order:

1. Complete address.
2. Complete part numbers.
3. Complete description of parts.
4. Model number for which part is required (indicate MARANTZ).
5. Account number (for account customers only).

Direct consumers will be provided with the current retail prive quotation on available parts in order to advise them of the cost of the parts and shipping.

OVERSEAS PARTS ORDERING

Parts may also be ordered from the following overseas addresses:

CANADA

Superscope Canada, Ltd.
3710 Nashua Drive
Mississauga
Ontario, Canada L4V1M5

AUSTRALIA

Superscope (Australasia) Pty., Ltd.
32 Cross Street (P.O. Box 604)
Brookvale 2100 N.S.W.
Australia

JAPAN

Marantz Japan, Inc.
3622 Kamitsuruma
Sagamihara Shi
Kanagawa, Japan

EUROPE

Superscope Europe, S.A.
Avenue Leopold III, 2
7120 Peronnes-Lez-Binche
Belgium

Marantz France
Rue Louis Armand 9
92600 Asnieres
Hauts-de-Seine
France

Marantz Audio U.K. Ltd.
London Road, 203
Staines
Middlesex
England

Superscope GmbH
Max-Planck-Strasse 22
D-6072 Dreieich 1
West Germany

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

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We sound better.

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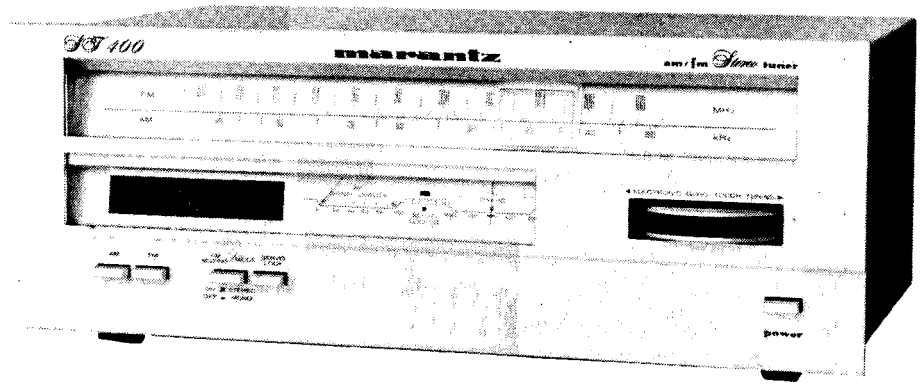
MODEL ST400 AM/FM STEREOPHONIC TUNER



1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model ST400 AM/FM Stereophonic Tuner.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of the operations in the Tuner.

The parts list furnishes information by which replacement parts may be ordered from the Marantz Company. A simple description is included for parts which can usually be obtained through local suppliers.

2. P.W. BOARDS

As can be seen from the circuit diagram, the chassis of Model ST400 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. Tuner . . . . . mounted on P.W. Board P100
2. Power Supply . . . . . mounted on P.W. Board P800
3. FM/AM Buffer . . . . . mounted on P.W. Board PC00
4. DE-Emphasis . . . . . mounted on P.W. Board PL00
5. Frequency Counter . . . . mounted on P.W. Board PQ00
6. Switch & Meter. . . . . mounted on P.W. Board PS01
7. Stereo Survo Led. . . . . mounted on P.W. Board PY00
8. Pointer Lamp . . . . . mounted on P.W. Board PZ01

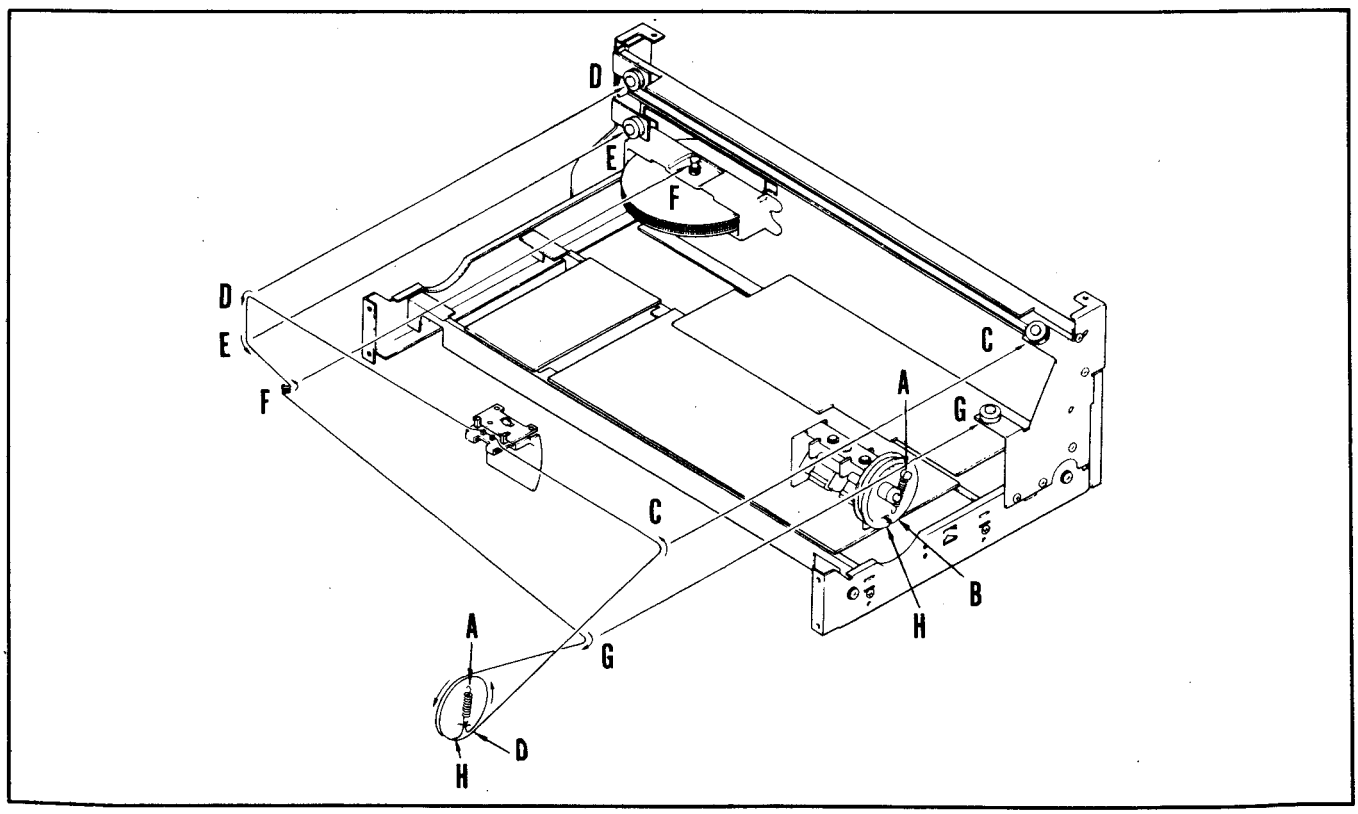


Figure 1. Dial Stringing

3. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model ST400 Tuner.

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal source for AM Alignment
Test Loop		Use with AM Signal Generator
FM Signal Generator MPX Signal Generator	Sound Technology Model 1000A	Signal source for FM alignment Stereo separation alignment and trouble shooting
Distortion Analyzer Audio Oscillator AC VTVM	Sound Technology Model 1700A	Distortion measurements Sinewave and squarewave signal source Voltage measurements (AC)
Oscilloscope	Tektronix Model T932 Philips Model 3232	Waveform analysis and trouble shooting
Frequency Counter		MPX Oscillator adjustment (VCO) Frequency display alignment
Circuit Tester		Trouble shooting
DC VTVM	Fluke Model 8000 "Digital" Simpson Model 313, Triplet Model 801	Voltage measurements (DC)
AC Wattmeter	Simpson Model 1379	Monitors primary power to tuner
Line Voltmeter	Simpson Model 1359	Monitors potential of primary power to tuner
Variable Autotransformer	Superior Electronic Co., Powerstat Model 116B-10A	Adjusts level of primary power to tuner

4. ALIGNMENT PROCEDURES

A dummy resistor of 47 k-ohms must be connected across the tuner output terminals before alignment.

4.1 FM Alignment Procedures (Selector switch in the "FM" position)

1. FM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	Sweep generator to point Ⓑ through 5pF capacitor	10.7 MHz marker at 10.6, 10.7 and 10.8 MHz	Oscilloscope to point Ⓒ	Quiet point on band.	L104 for maximum and symmetric response.
2			Oscilloscope to point Ⓓ		L201 for straight and Symmetric "S" curve response.
3	Repeat steps 1 and 2.				

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	RF generator to FM antenna terminals Ⓐ through matching network (300 ohms, balanced) (Maintain RF level below limit.)	87.3 MHz	VTVM to L or R channel output (W002)	87.3 MHz with tuning gang closed.	L103 for maximum output.
2		109 MHz		109 MHz with tuning gang open.	C119 for maximum output.
3		90 MHz		90 MHz	L101, L102 for maximum output.
4		106 MHz		106 MHz	ANT. RF. TRIM. CAP. for maximum output.
5	Repeat steps 1 to 4.				
6	Check overall response curve and repeat above steps as necessary to obtain maximum sensitivity.				
7	No connection	No signal			L201 Primary core (bottom) center tuning meter pointer indicates its center.
8	RF generator 1 mV output to FM antenna terminals Ⓐ through matching network (300 ohms, balanced)	98 MHz	Distortion meter to Ⓓ	98 MHz	L201 Secondary core (upper) for minimum distortion.
9					
10		98 MHz		98 MHz	R232 So that signal Strength meter M001 may read 85%

4.2 Muting Circuit Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	RF generator 12.5μV output to FM antenna terminals Ⓐ through matching network (300 ohms, balanced)	98 MHz	VTVM to R or L channel output (W 002)	98 MHz	R233 for 12.5μV threshold level. (During this adjustment turn the muting pushswitch "ON".)

4.3 Multiplex Alignment Procedures (Selector switch in the "FM" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	RF generator to FM antenna terminals Ⓐ through matching network (300 ohms, balanced), with 1mV FM stereo simulator RF level and 100% modulation (pilot 9%)	No Modulation	Frequency counter to point Ⓔ (J140)	98 MHz	R326 so that Frequency counter may precisely read 19 kHz
2		Stereo, left (1,000 Hz)	VTVM to right channel output (W002, white)		R316 for maximum output and same separation in both channels.
3		Stereo, right (1,000 Hz)	VTVM to left channel output (W002, red)		
4	Repeat steps 2 and 3.				

4.4 AM Alignment Procedures (Selector switch in the "AM" position)

1. AM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	No connection	No signal			R228 so that signal strength meter M001 may read 0%
2	Sweep generator to point Ⓕ	450 kHz marker	Oscilloscope to point Ⓖ (J141)	Quiet point on band	L154 for maximum and symmetric response.

2. AM RF Alignment

Step	Signal Source	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust:
1	Apply the signal to the AM bar antenna from the RF generator, using the test loop, as per the Figure 2.	525 kHz	VTVM to L or R channel output (W002)	525 kHz with tuning gang closed.	L153 for maximum output.
2		1,630 kHz		1,630 kHz with tuning gang open.	OSC. TRIM. CAP. for maximum output.
3		600 kHz		600 kHz	L051 for maximum output.
4		1,400 kHz		1,400 kHz	ANT. TRIM. CAP. for maximum output.
5		Repeat steps 1 to 4 as necessary to obtain maximum sensitivity.			

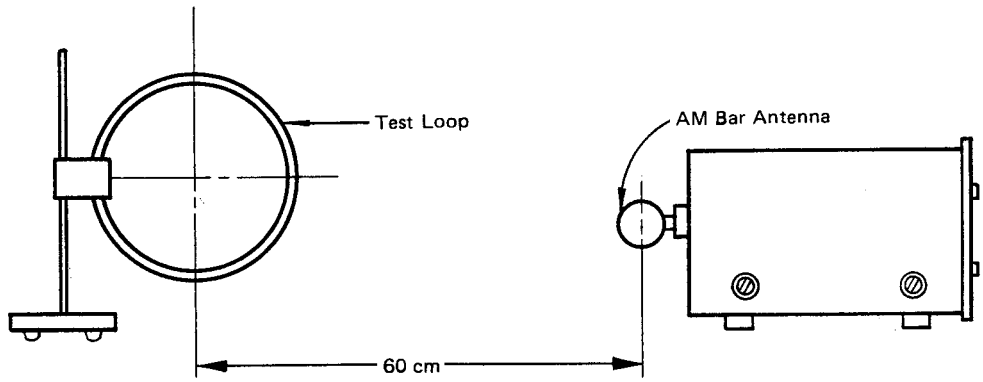


Figure 2. Application of AM Signal

4.5 Frequency Display Alignment Procedures

1. FM Alignment
   1) Confirm that a 22 k-ohm resistor of JQ09 is connected to JQ04 side.
   2) Set the output frequency of FM signal generator at 98 MHz accurately by using the frequency counter, and connect the FM signal generator to the FM antenna terminals through the IHF dummy.
   3) Set the Model ST400 Tuner in normal FM reception, and tune it to 98 MHz of FM signal generator output by observing the center meter.
   4) Re-insert JQ09 socket in the opposite position of step 1), so that the 22 k-ohm resistor is connected to JQ03 side.
   5) Adjust RQ04 semi-fixed resistor, located on right side in front-view, so that the frequency display of Model ST400 is stopped the switching at 98 MHz.
   6) Remove JQ08 socket as it is in step 1).

2. AM Alignment
   1) Set the output frequency of AM signal generator at 1000 kHz accurately by using the frequency counter, and, apply the signal to the AM bar antenna from the RF generator, using the test loop, as per the Figure 2.
   2) Set the Model ST400 Tuner in normal AM reception, and tune it to 1000 kHz of AM signal generator output by observing the RF signal quality meter for maximum deflection.
   3) Insert JQ09 socket, so that the 22 k-ohm resistor of JQ09 is connected to JQ03 side.
   4) Short-circuit the 22 k-ohm resistor for a few second by using the tweezers.
   5) Adjust RQ05 semi-fixed resistor, located on left side in front-view, so that the frequency display of Model ST400 is stopped the switching at 1000 kHz.
   6) Remove JQ08, and re-insert it so that the 22 k-ohm resistor is connected to JQ04 side.

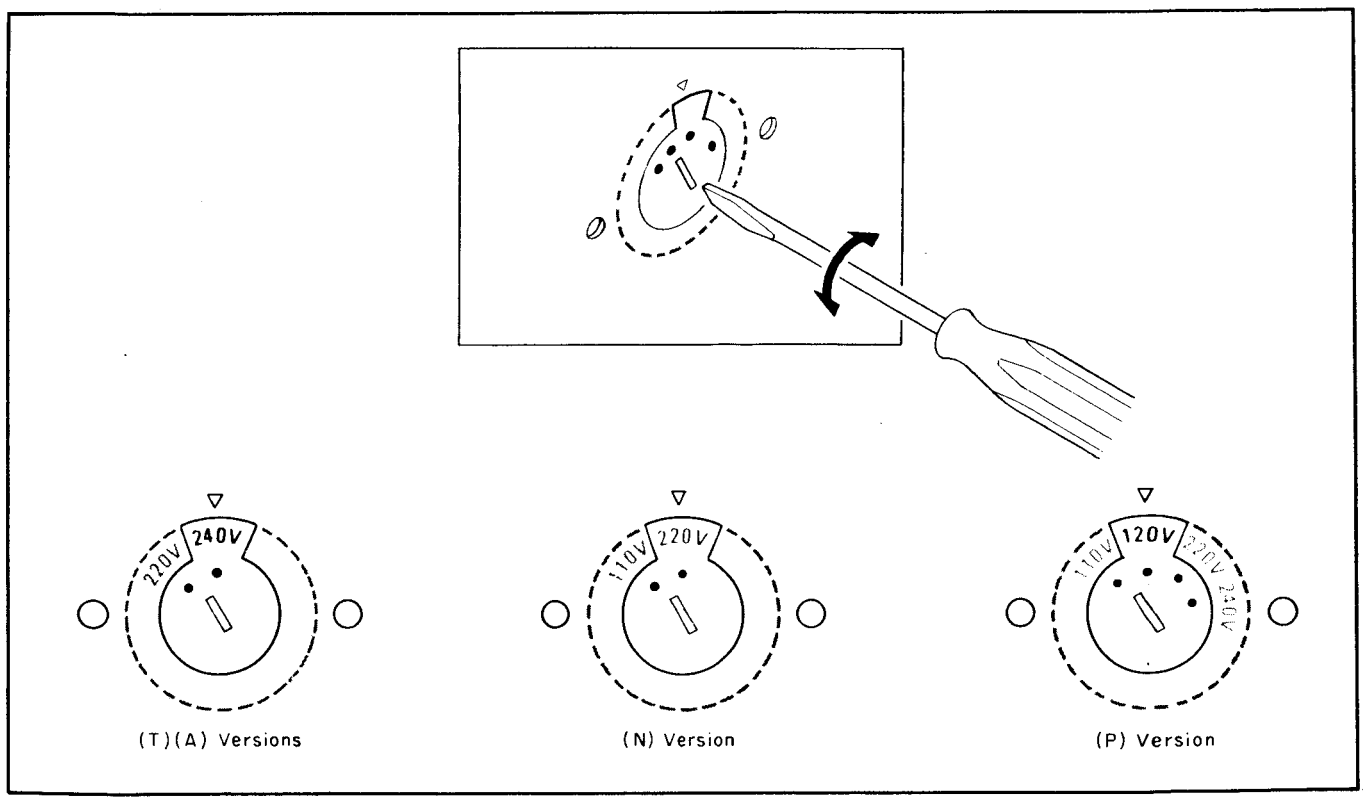
5. VOLTAGE CONVERSION

• EUROPEAN MODEL ONLY

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

CAUTION
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE. DO NOT DISASSEMBLE THE VOLTAGE SELECTOR ABSOLUTELY.

Voltage Conversion Chart



(T)(A) Versions (N) Version (P) Version

NOTE ON SAFETY:

THE PARTS MARKED WITH ⚠ ARE IMPORTANT PARTS ON THE SAFETY.
PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBERS WITHOUT FAIL.

FTZ REGULATION

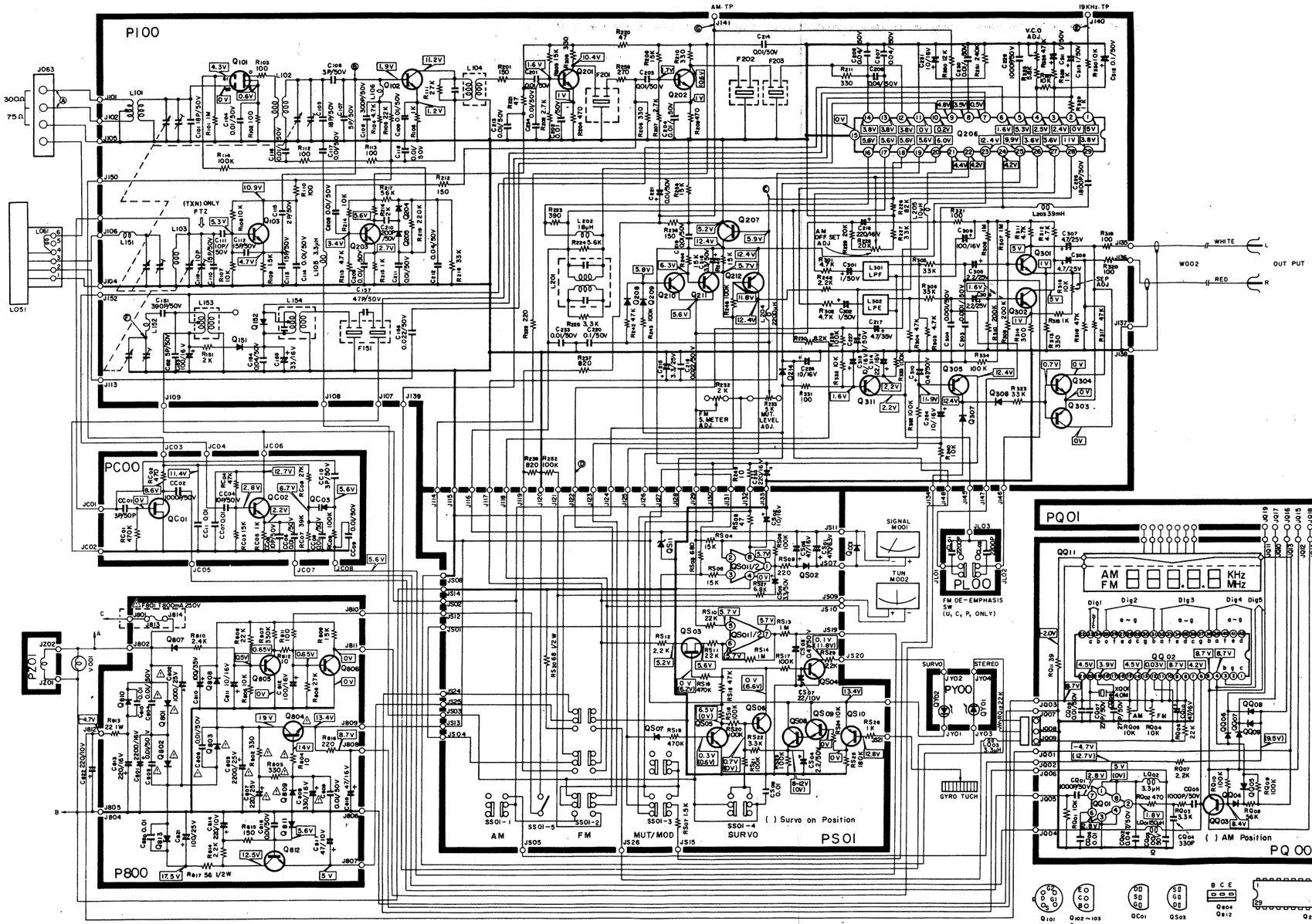
Instruction for the use in the range other than specified in FTZ codes.

Achtung für die Leute, die in dem Gebiet wohnen, wo die FTZ-Bestimmungen vorherrschend sind.

Sollte des Gerät auch für Frequenzen auszerhalb des in den FTZ-Bestimmungen angegebenen Bereiches empfangebereit sein, bitten wir, den Bereich durch Nachstellen des Kernes in der Oszillatorspule (in der Abbildung mit "FTZ" gekennzeichnet) so zu korrigieren, dass er den Bestimmungen entspricht.

NOTE ON SAFETY:

THE PARTS MARKED WITH ⚠ ARE IMPORTANT PARTS ON THE SAFETY.
PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBERS WITHOUT FAIL.



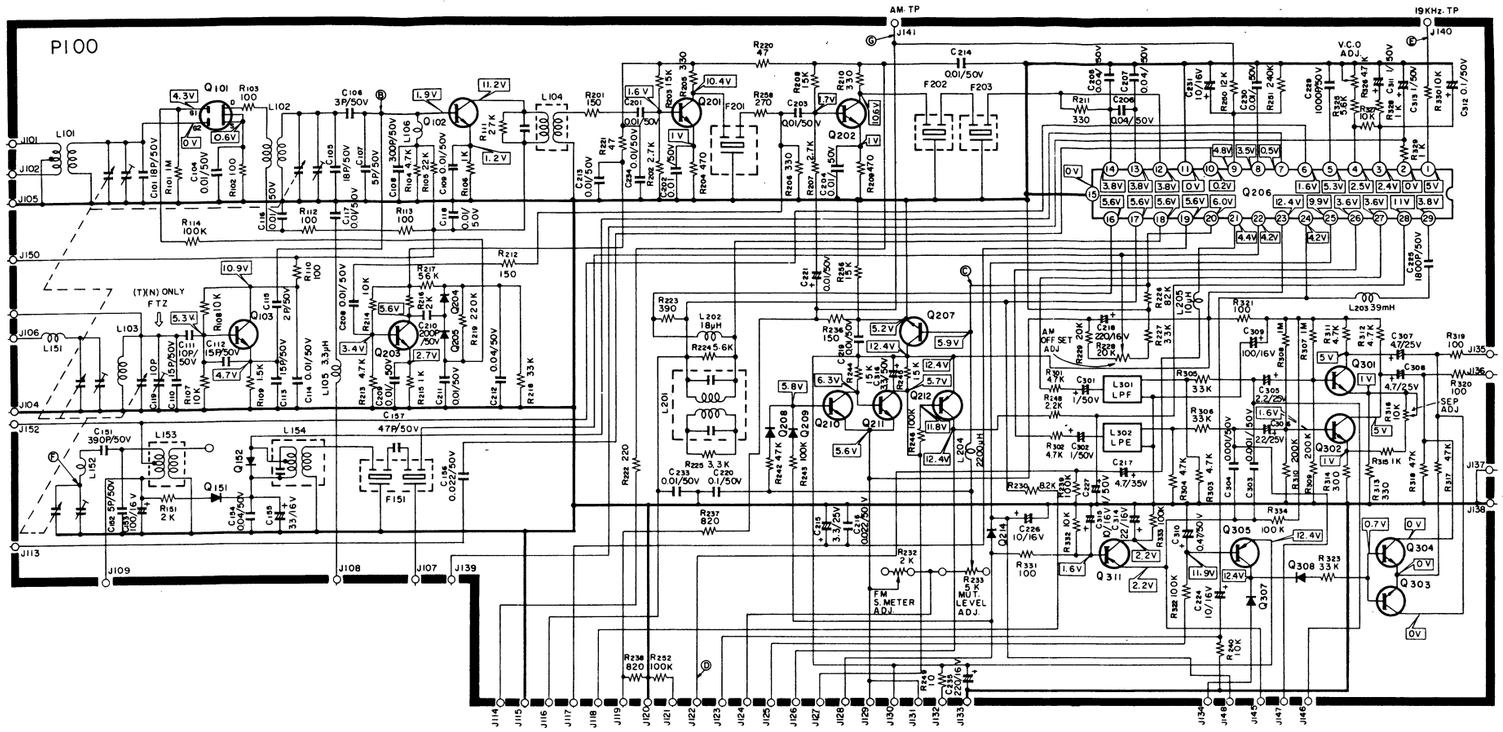
(T)(N) ONLY

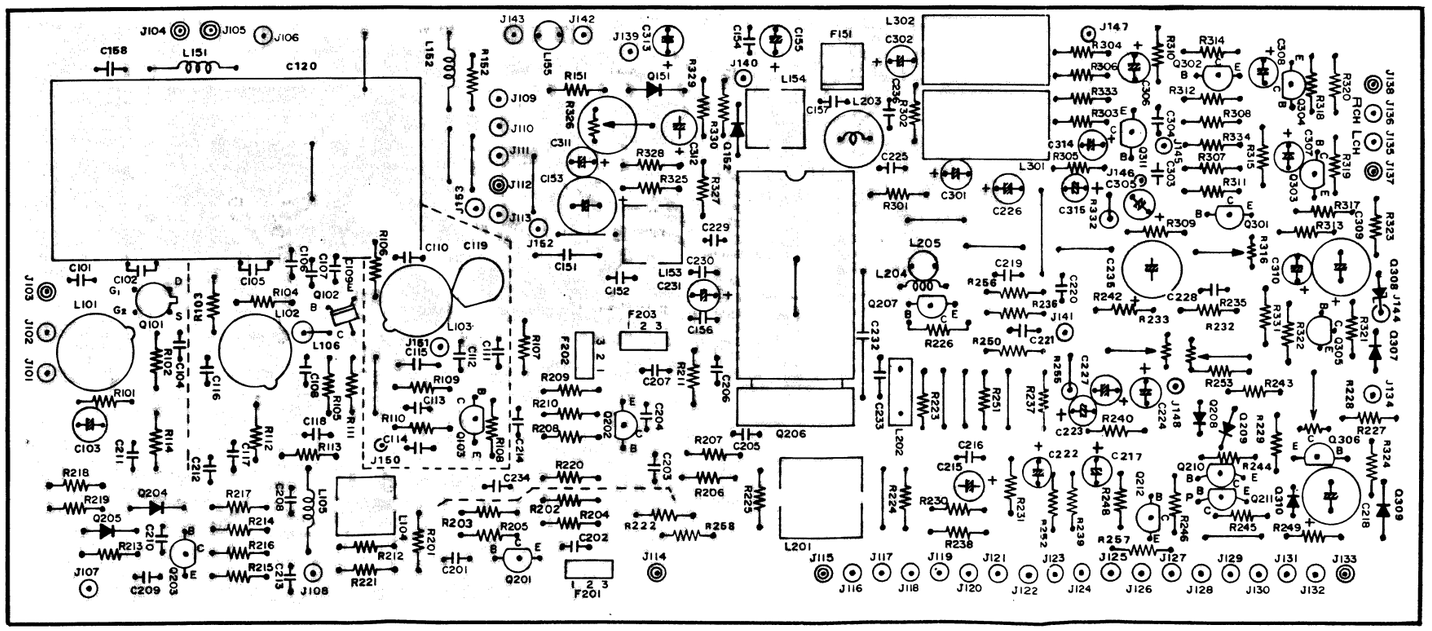
R305, 306	33K ⟶	18K
R309, 310	200K ⟶	150K
R313, 314	300 ⟶	240
C303, 304	0.001/50V ⟶	0.0033/50V

Q001	: HD20001210	D10DE
Q101	: HF400451B0	3SK45B
Q102	: HT305352B0	2SC535B or C
Q103,201,202,203,207	: HT308291C0	2SC829C
Q210,211,301,302,303,304	: HT308281D0	2SC828S
Q205	: HC10009020	AN7000
Q151,152,209,307	: HD20001210	1S2473C
Q204,205,208,214	: HD10003020	20A90M
Q212,305,311	: HT107222A0	2SA722S or T
Q308	: HD30023090	WZ-071
Q601 803,810,813	: HD20015030	DS135
Q804	: HT403131D0	2SD313D
Q805,806	: HT308281D0	2SC828S
Q807,808	: HD20001210	1S2473C
Q809	: HD30027090	WZ-140
Q811	: HD30015060	RD5.6
Q812	: HT403131D0	2SD313D
QC01	: HF200551D0	2SK55D
QC02	: HT308291C0	2SC829C
QC03	: HD40012090	1S2687
QQ01	: HC10004360	DS8629
QQ02	: HC10036030	LC7252
QQ03	: HT107332B0	2SA733Q or R
QQ04 - 10	: HD20001210	1S2473C
QQ11	: HQ30502410	7-LT-02
QS01	: HC10003090	NJM4558DJRC
QS02	: HD10001050	1N60
QS03	: HF200301C0	2SK30AY
QS04 06,08 - 10	: HT309452A0	2SC945Q or R
QS11	: HD30009060	RD6.2
QS07	: HD30029090	WZ090
QY01	: HI10004030	
QY02	: HI10008030	

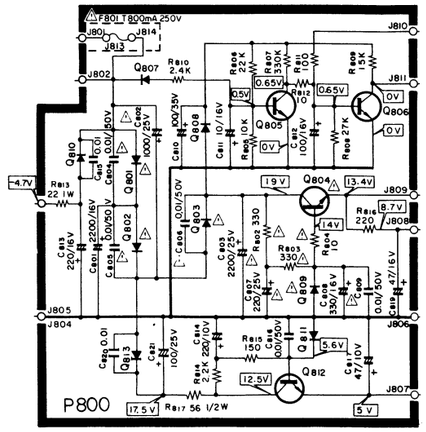
7. DIAGRAM AND COMPONENT LOCATIONS

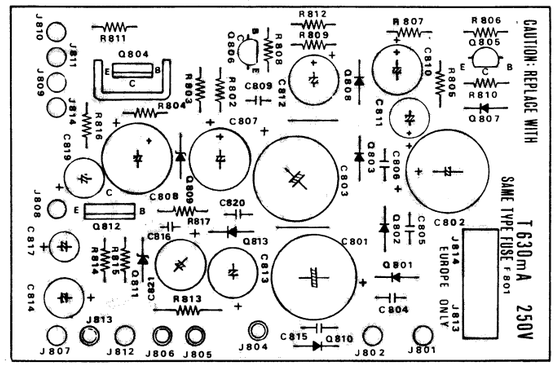
7.1 Tuner Assembly (P100) Schematic Diagram and Component Locations



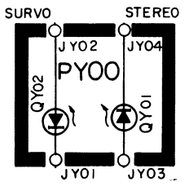


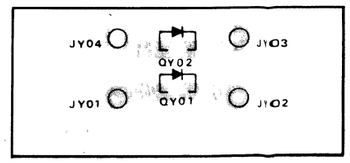
7.2 Power Supply (P800) Schematic Diagram and Component Locations



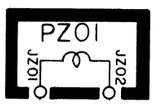


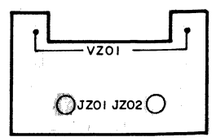
7.3 Stereo Survo Led Assembly (PY00) Schematic Diagram and Component Locations



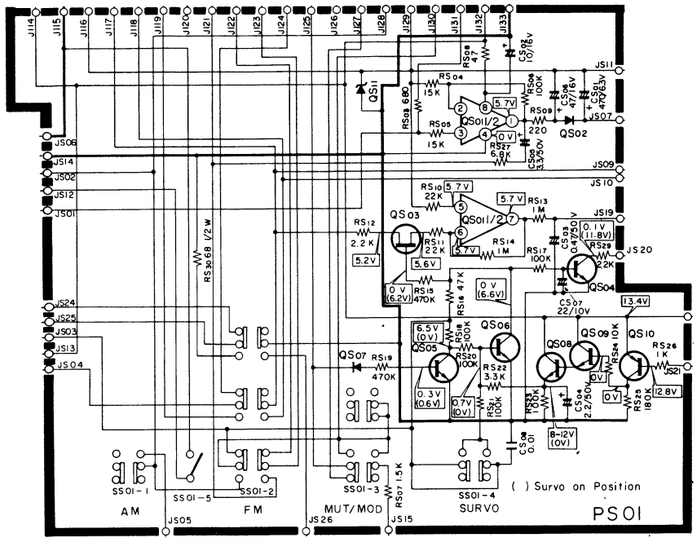


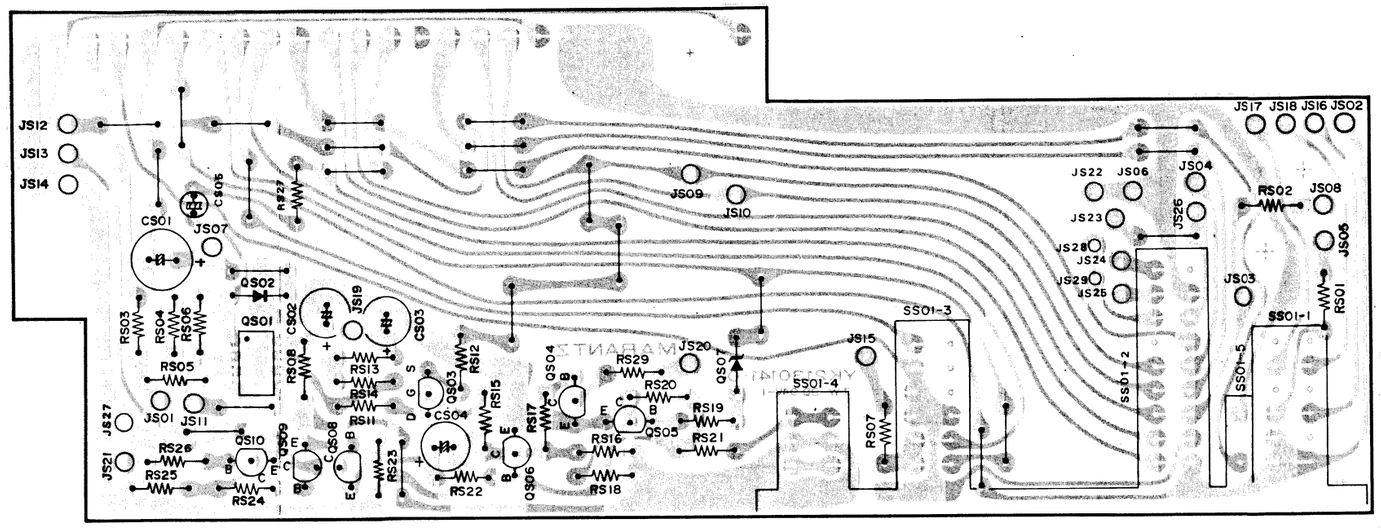
7.4 Pointer Lamp Assembly (PZ01) Schematic Diagram and Component Locations



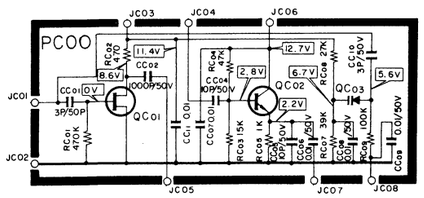


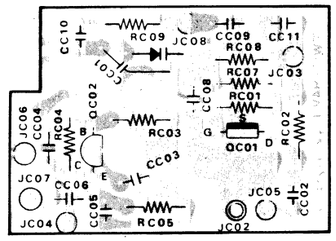
7.5 Switch and Meter Assembly (PS01) Schematic Diagram and Component Locations



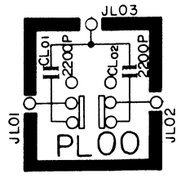


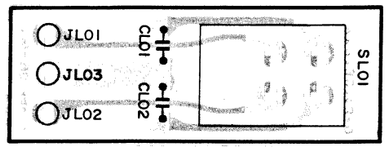
7.6 FM/AM Buffer Assembly (PC00)
Schematic Diagram and Component Locations



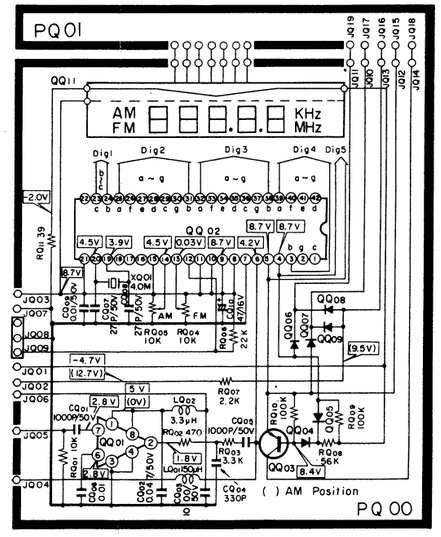


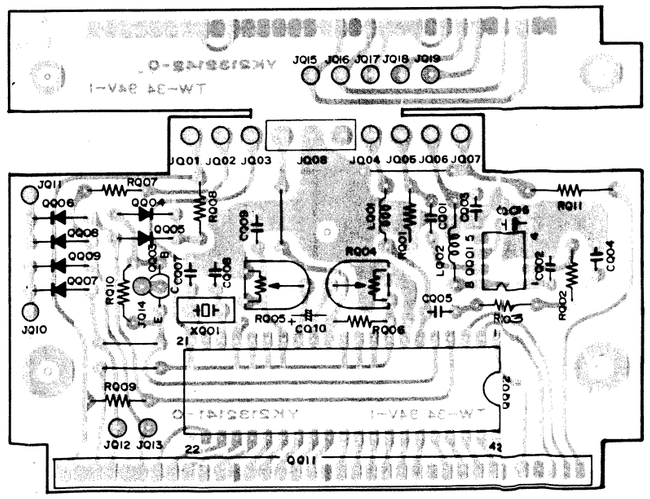
7.7 DE-Emphasis Assembly (PL00)
Schematic Diagram and Component Locations



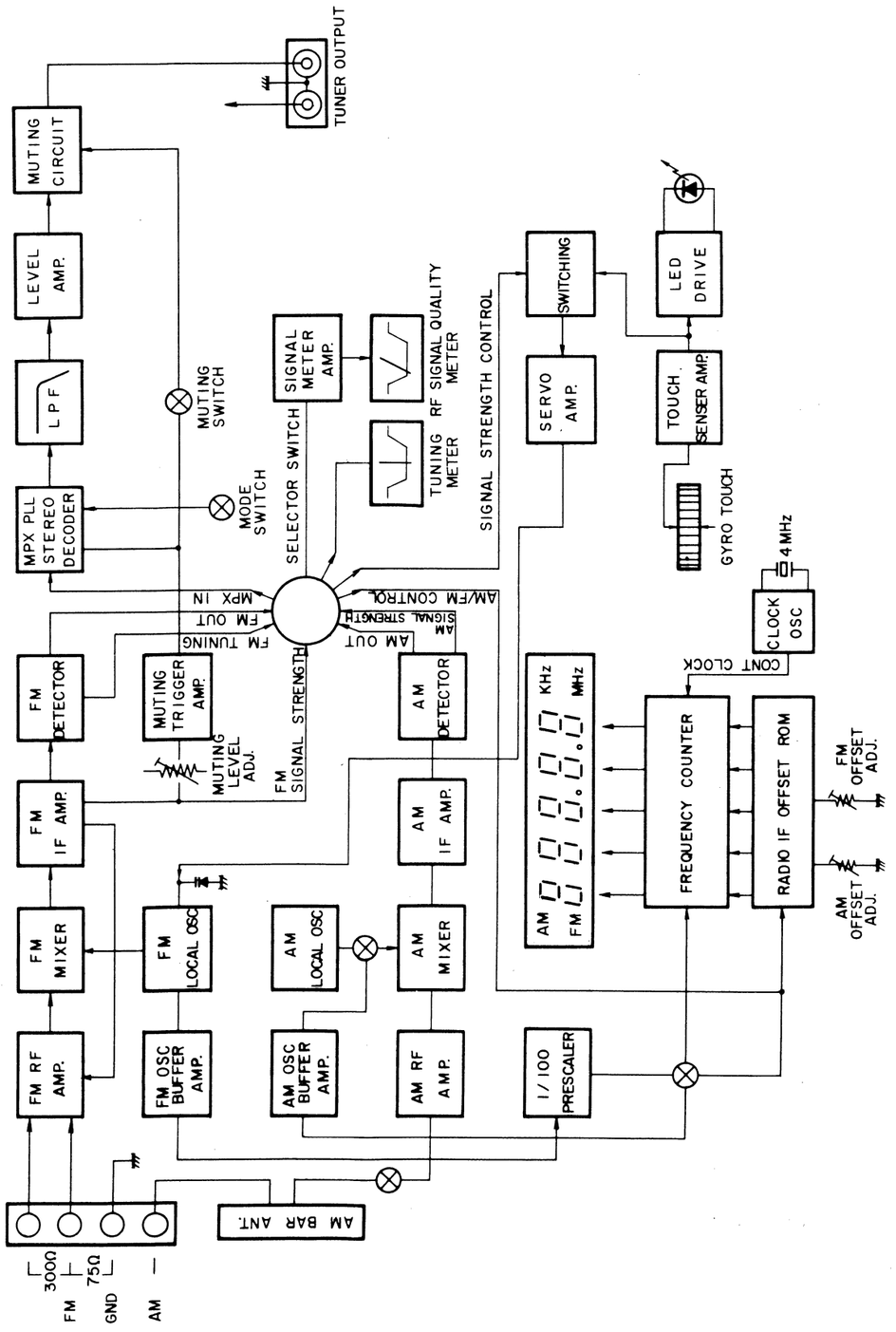


7.8 Frequency Counter Assembly (PQ00), Sub Assembly (PQ01)
Schematic Diagram and Component Locations



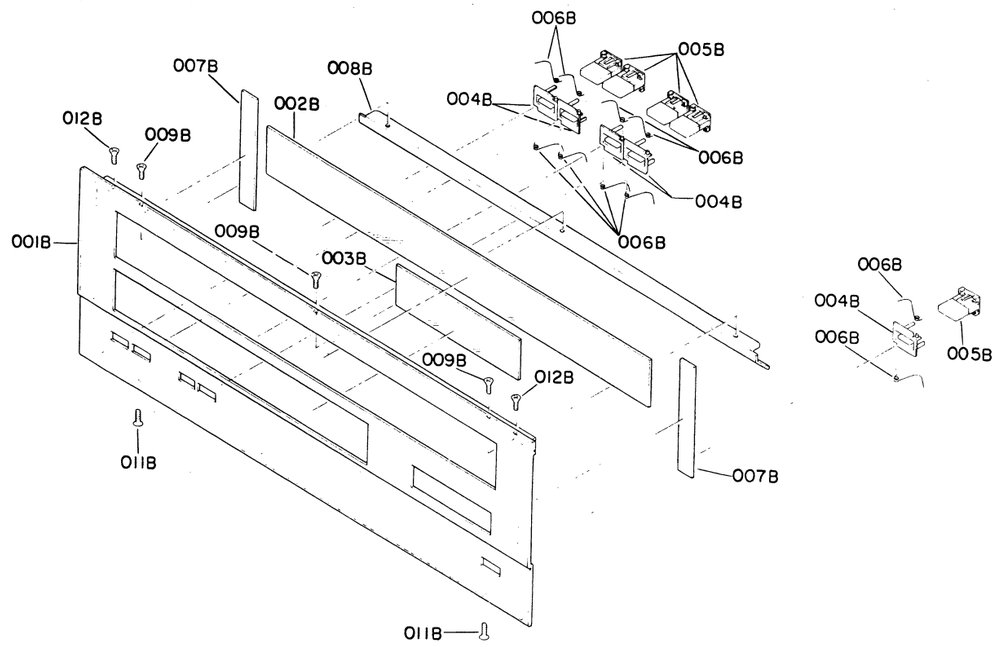


8. BLOCK DIAGRAM



9. EXPLODED VIEW AND PARTS LIST

- [C01-99] Front Panel

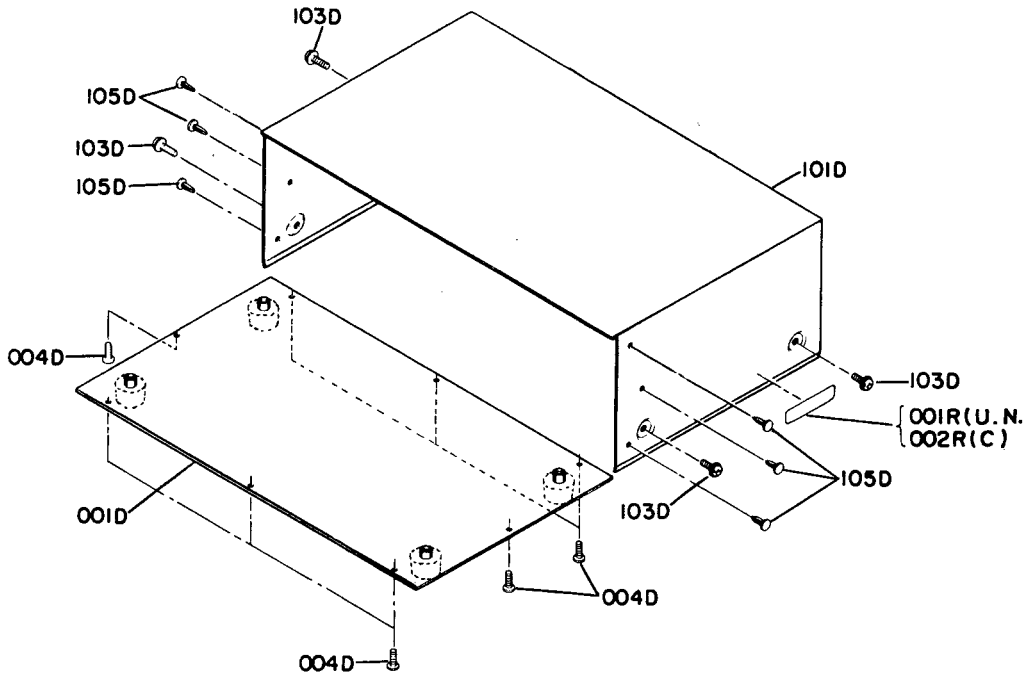


- (U) for U.S.A.
- (N) for Europe
- (C) for Canada
- (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
A	1	1	1	1	2132063400	Front Panel Assembly
001B	1	1	1	1	2132063010	Escutcheon
002B	1	1	1	1	2130158020	Window Dial
003B	1	1	1	1	2132158010	Window Meter
004B	5	5	5	5	2127259012	Bushing
007B	2	2	2	2	2128118010	Spacer
008B	1	1	1	1	2130053022	Cover
009B	3	3	3	3	51340308B0	F.H. TAP. Screw F3 x 8

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
005B	5	5	5	5	2127154010	Knob
006B	10	10	10	10	2127115010	Spring
011B	2	2	2	2	51280308U0	B.H. TAP. Screw B3 x 8
012B	2	2	2	2	51340308B0	F.H. TAP. Screw F3 x 8

• [C02-99] Lid. (Top and Bottom Cover)

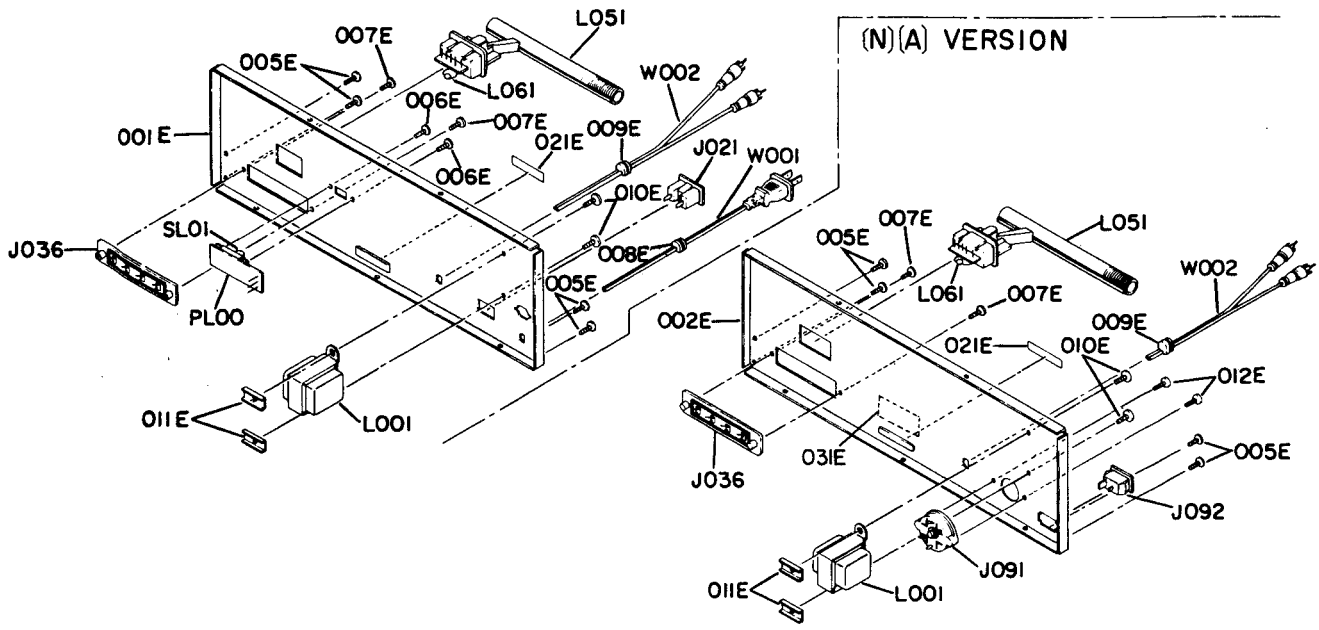


● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						BOTTOM COVER
001D	1	1	1	1	2130257500	Lid Assembly
004D	8	8	8	8	51280410U0	B.H. TAP. Screw B4 x 10

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						TOP COVER
101D	1	1	1	1	2130257010	Lid
103D	4	4	4	4	51260408U0	F. Washer Screw F4 x 8
105D	6	6	6	6	2991259010	Bushing
001R	1		1	1	2932861012	Label
002R		1			2911861140	Label

• [C03-99] Rear Panel

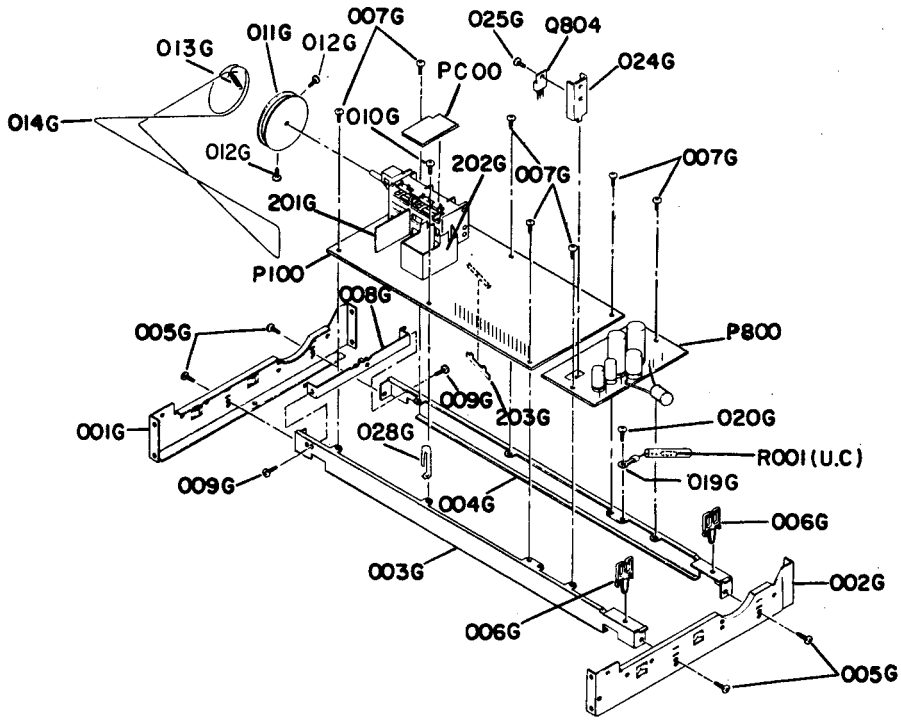


● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
001E	1				2132160210	Bracket
001E		1			2132160250	Bracket
002E			1		2130160222	Bracket
002E				1	2130160232	Bracket
005E	4	4	4	4	51280308U0	B.H. TAP. Screw B3 x 8
006E	2	2			51100308S9	B.H.M. Screw B3 x 8
007E	2	2	2	2	51280308U0	B.H. TAP. Screw B3 x 8
008E	1	1			1455259030	Bushing
009E	1	1			1455259090	Bushing
009E			1		1455259130	Bushing
010E	2	2	2	2	5110040859	B.H.M. Screw B4 x 8
011E	2	2	2	2	2922005010	Clamper
012E			2	2	51280310U0	B.H. TAP. Screw B3 x 10
021E	1	1	1	1	2112265010	Indicator
031E			1		4581861010	Label

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
⚠J021	1	1			YJ04000560	Jack AC Outlet
J036	1	1	1	1	YT01040180	Ant. Terminal
⚠J091			1	1	BY05060010	Plug Voltage Selector
J092			1	1	YP04000580	Plug AC Inlet
⚠L001	1	1			TS14128090	Power Transe
⚠L001			1		TS14128100	Power Transe
⚠L001				1	TS14128120	Power Transe
L051	1	1	1	1	LF11200620	Ant. Coil
L061	1	1	1	1	LC11540040	Choke Coil
⚠W001	1	1			YC01900070	AC Power Cord
W002	1	1			YB01000310	Connective Cord
W002			1	1	YB01000300	Connective Cord

• [P01-99] Main Chassis, Tuner and Power Supply P.W. Board

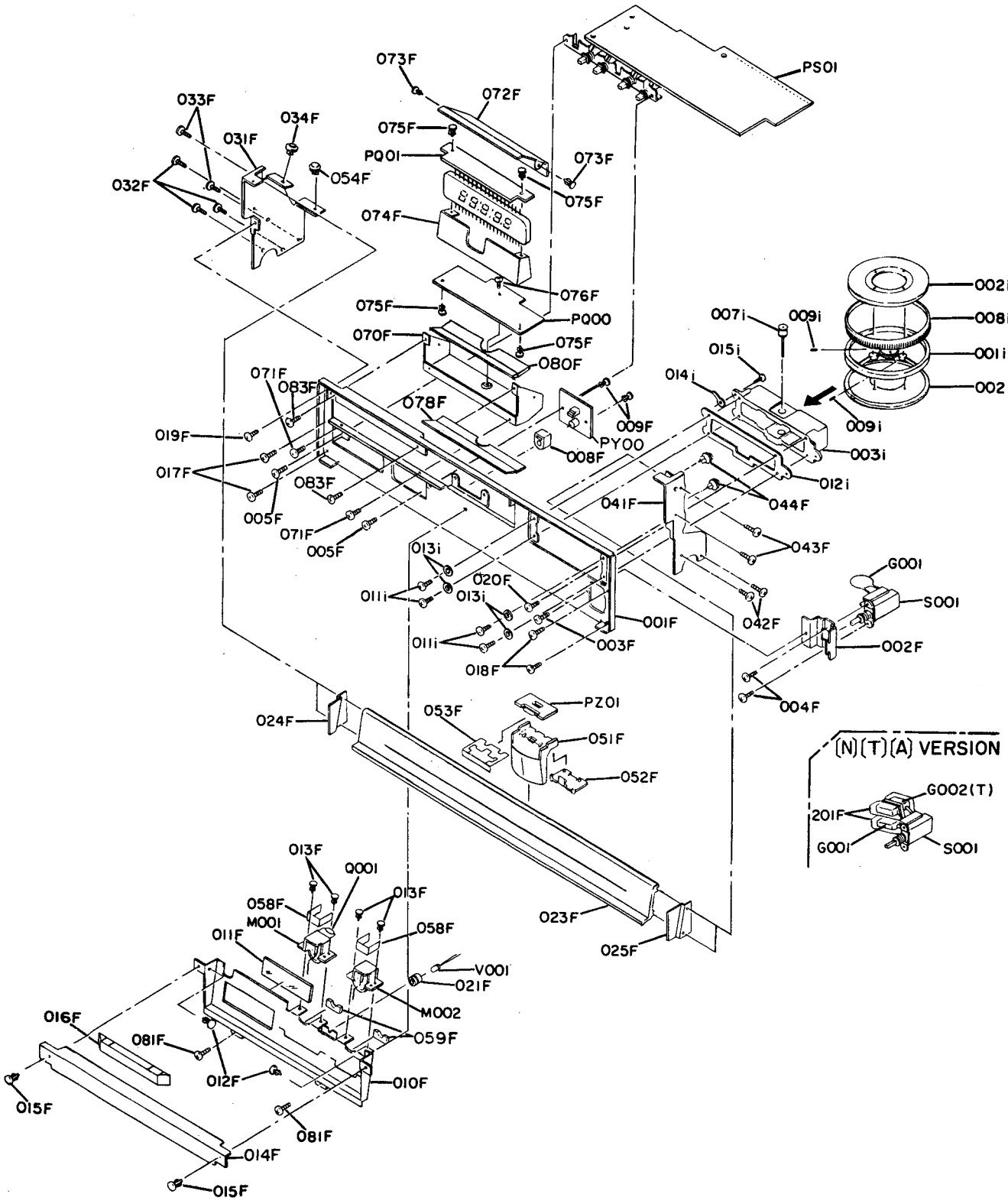


● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
001G	1	1	1	1	2259126013	Stay Left
002G	1	1	1	1	2259126023	Stay Right
003G	1	1	1	1	2259126040	Stay Front
004G	1	1	1	1	2259126050	Stay Back
005G	4	4	4	4	51280308B0	B.H. TAP. Screw B3 x 8
006G	2	2	2	2	2886005040	Clamper
007G	7	7	7	7	51280308B0	B.H. TAP. Screw B3 x 8
008G	1	1	1	1	2259126063	Stay Front End
009G	2	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
010G	1	1	1	1	51280310B0	B.H. TAP. Screw B3 x 10
011G	1	1	1	1	2991159010	Drum
012G	2	2	2	2	51064019A9	P.H.M. Screw
013G	1	1	1	1	71101689L0	Spring
014G	1	1	1	1	72040805A0	Spring (200)
019G	1	1	1	1	62030039W0	Lug
020G	1	1	1	1	51280308B0	B.H. TAP. Screw B3 x 8
024G	1	1	1	1	2130053030	Heatsink
025G	1	1	1	1	51100306A9	B.H.M. Screw B3 x 6
028G	1	1	1	1	4220005040	Clamper

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
201G	1	1	1	1	2259109040	Shield
202G	1	1	1	1	2132109010	Shield
203G	1	1	1	1	2259109060	Shield
P100	1	1	1	1	YG22590010	P.W. Board Tuner
	1	1			ZZ21321010	P.W. Board Assembly
			1	1	ZZ21328010	P.W. Board Assembly
P800	1	1	1	1	YF21320010	P.W. Board Power Supply
	1	1			ZZ21320010	P.W. Board Assembly
			1	1	ZZ21327010	P.W. Board Assembly
PC00	1	1	1	1	YK21321430	P.W. Board FM/AM Buffer
	1	1	1	1	ZZ21321430	P.W. Board Assembly
Q804	1	1	1	1	HT403131D0	Transistor 2SD1313D
⚠R001	1	1			RC10225120	Resistor 2.2MΩ

- **[P02-99] Front Chassis and General Parts**

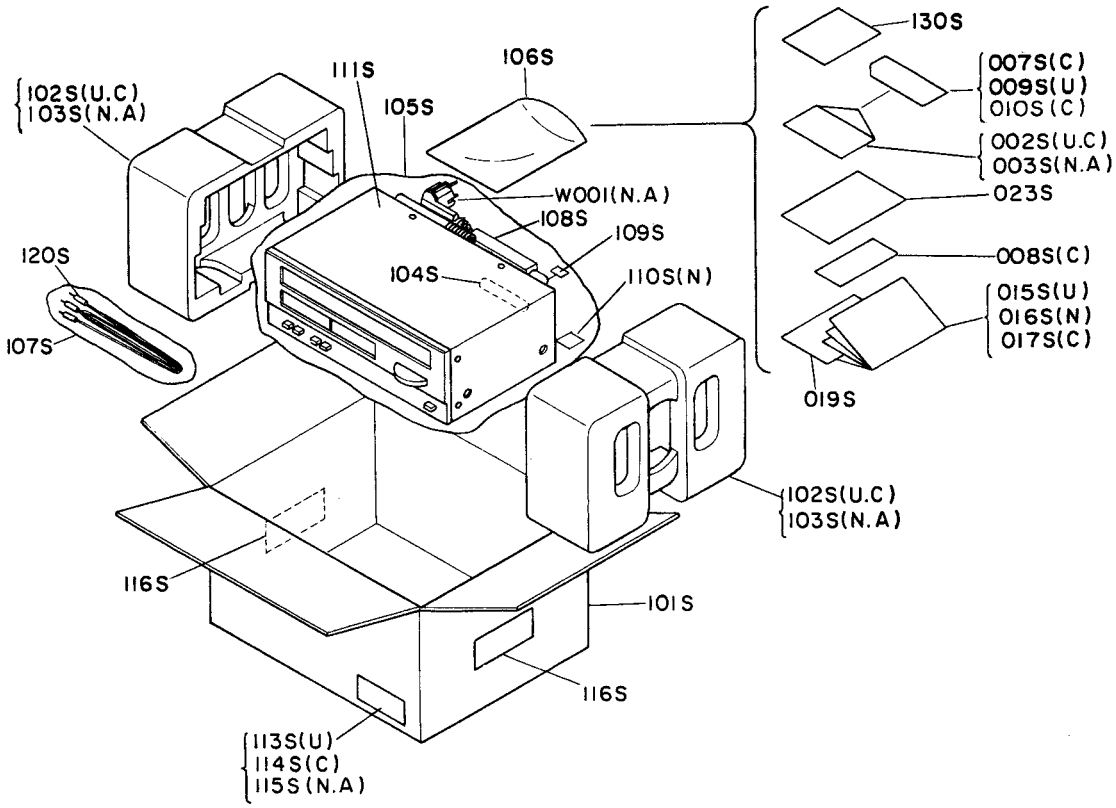


● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
B	1	1	1	1	2286273400	Flywheel Assembly
001i	1	1	1	1	2219273013	Flywheel
002i	2	2	2	2	2219063030	Escutcheon
008i	1	1	1	1	2286353010	Ring
009i	2	2	2	2	51690306Q9	Socket Screw
003i	1	1	1	1	2219104500	Retainer
007i	1	1	1	1	2219112012	Shaft
011i	4	4	4	4	51280308B0	B.H. TAP. Screw B3 x 8
012i	1	1	1	1	2286120012	Insulator
013i	4	4	4	4	2219259030	Bushing
014i	1	1	1	1	62030039W0	Lug
015i	1	1	1	1	51280405B0	B.H. TAP. Screw B4 x 5
001F	1	1	1	1	2132160010	Bracket
002F	1	1	1	1	2130160030	Bracket
003F	1	1	1	1	51280308B0	B.H. TAP. Screw B3 x 8
004F	2	2	2	2	51100308A9	B.H.M. Screw B3 x 8
005F	2	2	2	2	51100308A9	B.H.M. Screw B3 x 8
008F	1	1	1	1	2132259010	Bushing
009F	2	2	2	2	2912259010	Bushing
010F	1	1	1	1	2132302010	Dial
011F	1	1	1	1	2132158023	Window
012F	2	2	2	2	2912259020	Bushing
013F	4	4	4	4	2276005050	Clamper
014F	1	1	1	1	2132053020	Cover
015F	2	2	2	2	2912259020	Bushing
016F	1	1	1	1	2130274013	Reflector
017F	2	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
018F	2	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
019F	1	1	1	1	51280308B0	B.H. TAP. Screw B3 x 8
020F	1	1	1	1	51280308B0	B.H. TAP. Screw B3 x 8
021F	1	1	1	1	2417259010	Bushing
023F	1	1	1	1	2130302010	Dial
024F	1	1	1	1	2130053030	Cover
025F	1	1	1	1	2130053040	Cover
031F	1	1	1	1	2130160042	Bracket
032F	3	3	3	3	51280308B0	B.H. TAP. Screw B3 x 8
033F	2	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
034F	1	1	1	1	2286262500	Pulley
041F	1	1	1	1	2130160052	Bracket
042F	2	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
043F	2	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
044F	2	2	2	2	2286262500	Pulley
051F	1	1	1	1	2112103012	Pointer
052F	1	1	1	1	2112103023	Pointer
053F	1	1	1	1	2112103033	Mask
054F	1	1	1	1	2276262500	Pulley
058F	2	2	2	2	2112053010	Cover
059F	2	2	2	2	2112053030	Cover
070F	1	1	1	1	2132109020	Shield
071F	2	2	2	2	51280305B0	B.H. TAP. Screw B3 x 5
072F	1	1	1	1	2132109032	Shield
073F	2	2	2	2	2912259020	Bushing

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
074F	1	1	1	1	2132271010	Holder
075F	4	4	4	4	2912259020	Bushing
076F	1	1	1	1	51280305B0	B.H. TAP. Screw B3 x 5
078F	1	1	1	1	2132120110	Insulator
080F	1	1	1	1	2132120010	Insulator
081F	2	2	2	2	51280308B0	B.H. TAP. Screw B3 x 8
083F	2	2	2	2	2912259020	Bushing
201F			1	1	2219120010	Insulator
⚠G001	1	1			DK18103530	Ceramic Cap. Spark Killer
⚠G001			1	1	DF17223800	Film Cap. Spark Killer
M001	1	1	1	1	IM11000010	DC Meter Signal
M002	1	1	1	1	IM11000020	DC Meter Tuning
Q001	1	1	1	1	HD20001210	Diode D10DE
⚠S001	1	1			SP01010240	Push Switch Power
⚠S001			1	1	SP02010330	Push Switch Power

• [H01-99] Packing Materials



● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
002S	1				2225813012	Envelope
002S		1			2918813012	Envelope
003S				1	9631000090	Envelope
007S		1			9630000180	Guarantee Card
008S		1			9650000053	S. Station Card
009S	1				2818854026	Guarantee Card
010S		1			2818854043	Guarantee Card
015S	1				2130851010	Instructions
016S			1		2130851310	Instructions
016S				1	2130851010	Instructions
017S		1			2130851310	Instructions
019S	1				2132851020	Instructions
019S		1			2132851050	Instructions
019S			1	1	2132851030	Instructions
023S		1			2886851100	Instructions

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
101S	1	1			2132801010	Packing Case
101S			1	1	2132801040	Packing Case
102S	2	2			4214809015	Cushion
103S			2	2	4214809015	Cushion
104S	1	1	1	1	2819056010	Buffer
105S	1	1		1	9090909040	Polyethy Sheet
105S			1		9014335330	Polyethy Bag
106S	1	1	1	1	9013025010	Polyethy Bag
107S	1	1		1	9011325010	Polyethy Bag
108S	1	1	1	1	2864804010	Sleeve
109S			1	1	9560000043	Hang Tag
110S			1		2731821010	Silicagel
111S	1	1	1	1	2918107160	Sheet
113S	3				9526019010	Serial No. Card
114S		3			9526019020	Serial No. Card
115S			3		9526019060	Serial No. Card
115S				3	9526019030	Serial No. Card
116S		2			9510901020	Lavel
120S	1	1	1	1	ZA02000070	Ext. Antenna
130S			1		2132856010	Circuit Diagram
⚠W001			1	1	ZC01805010	AC Power Cord

10. ELECTRICAL PARTS LIST

● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						P100-TUNER CIRCUIT BOARD
P100	1	1	1	1	YG22590010	P.W. Board Tuner
	1	1			ZZ21321010	P.W. Board Assembly
			1	1	ZZ21328010	P.W. Board Assembly
						P100-CAPACITORS
C101	1	1	1	1	DD15180370	Ceramic 18pF ±5%
C104	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C105	1	1	1	1	DD15180370	Ceramic 18pF ±5%
C106	1	1	1	1	DD10030370	Ceramic 3pF ±0.25pF
C107	1	1	1	1	DD10050370	Ceramic 5pF ±0.25pF
C108	1	1	1	1	DD15301360	Ceramic 300pF ±5%
C109	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C110	1	1	1	1	DD15150330	Ceramic 15pF ±5%
C111	1	1	1	1	DD11100300	Ceramic 10pF ±0.5pF
C112	1	1	1	1	DD15150300	Ceramic 15pF ±5%
C113	1	1	1	1	DD15150300	Cramic 15pF ±5%
C114	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C115	1	1	1	1	DD10020370	Ceramic 2pF ±0.25pF
C116	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C117	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C118	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C119	1	1	1	1	CT11000080	Trimming 10pF
C120	1	1	1	1	CA32400090	Variable
C151	1	1	1	1	DF55391090	Film 390pF
C152	1	1	1	1	DD10050370	Ceramic 5pF
C153	1	1	1	1	EA10701690	Elect 100μF 16V
C154	1	1	1	1	DK18403320	Ceramic 0.04μF +80% −20%
C155	1	1	1	1	EA33601690	Elect 33μF 16V
C156	1	1	1	1	DK18223310	Ceramic 0.022μF +80% −20%
C157	1	1	1	1	DD15470370	Ceramic 47pF ±5%
C201	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C202	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C203	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C204	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C205	1	1	1	1	DK18403320	Ceramic 0.04μF +80% −20%
C206	1	1	1	1	DK18403320	Ceramic 0.04μF +80% −20%
C207	1	1	1	1	DK18403320	Ceramic 0.04μF +80% −20%
C208	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C209	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C210	1	1	1	1	DD15201360	Ceramic 200pF ±5%
C211	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C212	1	1	1	1	DK18403320	Ceramic 0.04μF +80% −20%
C213	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C214	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C215	1	1	1	1	EA33502590	Elect 3.3μF 25V
C216	1	1	1	1	DK18223310	Ceramic 0.022μF +80% −20%
C217	1	1	1	1	EA10603590	Elect 10μF 35V
C218	1	1	1	1	EA22701690	Elect 220μF 16V
C219	1	1	1	1	DF17103300	Film 0.01μF ±20%
C220	1	1	1	1	DK18104020	Ceramic 0.1μF ±20%
C221	1	1	1	1	EE22405040	Elect 0.22μF 50V
C224	1	1	1	1	EA10601690	Elect 10μF 16V
C225	1	1	1	1	DF15182300	Film 1800pF ±5%
C226	1	1	1	1	EA10601690	Elect 10μF 16V
C227	1	1	1	1	EA10505090	Ceramic 1μF 50V
C228	1	1	1	1	DK18403320	Ceramic 0.04μF +80% −20%
C229	1	1	1	1	DF55102090	Film 1000pF ±5%
C230	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C231	1	1	1	1	EA10601690	Elect 10μF 16V
C233	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C234	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C235	1	1	1	1	EA22701690	Elect 220μF 16V
C301	1	1	1	1	EE10505050	Elect 1μF 50V
C302	1	1	1	1	EE10505050	Elect 1μF 50V
C303	1	1			DF15102300	Film 0.01μF ±5%
C303			1	1	DF15332300	Film 0.0033μF±5%
C304	1	1			DF15102300	Film 0.01μF ±5%
C304			1	1	DF15332300	Film 0.0033μF±5%
C305	1	1	1	1	EA22502590	Elect 2.2μF 25V
C306	1	1	1	1	EA22502590	Elect 2.2μF 25V
C307	1	1	1	1	EE47502550	Elect 4.7μF 25V
C308	1	1	1	1	EE47502550	Elect 4.7μF 25V
C309	1	1	1	1	EA10701690	Elect 100μF 16V
C310			1	1	EA47405090	Elect 0.47μF 50V
C311	1	1	1	1	EE10505050	Elect 1μF 50V
C312	1	1	1	1	EE10405050	Elect 0.1μF 50V
C313	1	1	1	1	EA10505090	Elect 1μF 50V
C314	1	1	1	1	EA22601690	Elect 22μF 16V
C315	1	1	1	1	EA10601690	Elect 10μF 16V
C316	1	1			EA33505090	Elect 3.3μF 50V
						P100-RESISTORS (All Resistors are ±5% & 1/4W)
R101	1	1	1	1	GD05105140	1MΩ
R102	1	1	1	1	GD05101140	100Ω
R103	1	1	1	1	GD05101140	100Ω
R104	1	1	1	1	GD05472140	4.7kΩ
R105	1	1	1	1	GD05223140	22kΩ
R106	1	1	1	1	GD05102140	1kΩ
R107	1	1	1	1	GD05103140	10kΩ
R108	1	1	1	1	GD05103140	10kΩ
R109	1	1	1	1	GD05152140	1.5kΩ
R110	1	1	1	1	GD05101140	100Ω
R111	1	1	1	1	GD05273140	27kΩ
R112	1	1	1	1	GG05101140	100Ω
R113	1	1	1	1	GD05101140	220Ω
R114	1	1	1	1	GD05104140	100kΩ
R151	1	1	1	1	GD05202140	2kΩ
R201	1	1	1	1	GD05151140	150Ω
R202	1	1	1	1	GD05272140	2.7kΩ
R203	1	1	1	1	GD05153140	15kΩ
R204	1	1	1	1	GD05471140	470Ω
R205	1	1	1	1	GD05331140	330Ω
R206	1	1	1	1	GD05331140	330Ω
R207	1	1	1	1	GD05272140	2.7kΩ
R208	1	1	1	1	GD05153140	15kΩ
R209	1	1	1	1	GD05471140	470Ω
R210	1	1	1	1	GD05331140	330Ω
R211	1	1	1	1	GD05331140	330Ω
R212	1	1	1	1	GD05151140	150Ω
R213	1	1	1	1	GD05472140	4.7kΩ
R214	1	1	1	1	GD05103140	10kΩ
R215	1	1	1	1	GD05102140	1kΩ

● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
R216	1	1	1	1	GD05202140	2kΩ
R217	1	1	1	1	GD05563140	56kΩ
R218	1	1	1	1	GD05333140	33kΩ
R219	1	1	1	1	GD05224140	220kΩ
R220	1	1	1	1	GD05470140	47Ω
R221	1	1	1	1	GD05470140	47Ω
R222	1	1	1	1	GD05221140	220Ω
R223	1	1	1	1	GD05391140	390Ω
R224	1	1	1	1	GD05562140	5.6kΩ
R225	1	1	1	1	GD05332140	3.3kΩ
R226	1	1	1	1	GD05823140	82kΩ
R227	1	1	1	1	GD05333140	33kΩ
R228	1	1	1	1	RA02030060	Trimming 20kΩ
R229	1	1	1	1	GD05472140	4.7kΩ
R230	1	1	1	1	GD05822140	8.2kΩ
R232	1	1	1	1	RA02020180	Trimming 3kΩ
R233	1	1	1	1	RA05020160	Trimming 5kΩ
R235	1	1	1	1	GD05473140	47kΩ
R236	1	1	1	1	GD05151140	150Ω
R237	1	1	1	1	GD05821140	820Ω
R238	1	1	1	1	GD05563140	56kΩ
R239	1	1	1	1	GD05104140	100kΩ
R240	1	1	1	1	GD05103140	10kΩ
R242	1	1	1	1	GD05473140	47kΩ
R243	1	1	1	1	GD05104140	100kΩ
R244	1	1	1	1	GD05153140	15kΩ
R245	1	1	1	1	GD05153140	15kΩ
R246	1	1	1	1	GD05104140	100kΩ
R248	1	1	1	1	GD05222140	2.2kΩ
R249	1	1	1	1	GG05100 0	10Ω
R250	1	1	1	1	GD05123140	12kΩ
R251	1	1	1	1	GD05244140	240kΩ
R252	1	1	1	1	GD05104140	100kΩ
R256	1	1	1	1	GD05153140	15kΩ
R258	1	1	1	1	GD05271140	270Ω
R301	1	1	1	1	GD05472140	4.7kΩ
R302	1	1	1	1	GD05472140	4.7kΩ
R303	1	1	1	1	GD05472140	4.7kΩ
R304	1	1	1	1	GD05472140	4.7kΩ
R305	1	1			GD05333140	33kΩ
R305			1	1	GD05183140	18kΩ
R306	1	1			GD05333140	33kΩ
R306			1	1	GD05183140	18kΩ
R307	1	1	1	1	GD05105140	1MΩ
R308	1	1	1	1	GD05105140	1MΩ
R309	1	1			GD05204140	200kΩ
R309			1	1	GD05154140	150kΩ
R310	1	1			GD05204140	200kΩ
R310			1	1	GD05154140	150kΩ
R311	1	1	1	1	GD05472140	4.7kΩ
R312	1	1	1	1	GD05472140	4.7kΩ
R313	1	1			GD05301140	300Ω
R313			1	1	GD05241140	240Ω
R314	1	1			GD05301140	300Ω
R314			1	1	GD05241140	240Ω
R315	1	1	1	1	GD05102140	1kΩ
R316	1	1	1	1	RA01030260	Trimming 10kΩ
R317	1	1	1	1	GD05473140	47kΩ
R318	1	1	1	1	GD05473140	47kΩ
R319	1	1	1	1	GD05101140	100Ω

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
R320	1	1	1	1	GD05101140	100Ω
R321	1	1	1	1	GG05101140	100Ω
R322	1	1	1	1	GD05104140	100kΩ
R323	1	1	1	1	GD05472140	4.7kΩ
R325	1	1	1	1	GD05562140	5.6kΩ
R326	1	1	1	1	RA04720050	Trimming 4.7kΩ
R327	1	1	1	1	GD05103140	10kΩ
R328	1	1	1	1	GD05102140	1kΩ
R329	1	1	1	1	GD05102140	1kΩ
R330	1	1	1	1	GD05103140	10kΩ
R331	1	1	1	1	GD05101140	100Ω
R332	1	1	1	1	GD05103140	10kΩ
R333	1	1	1	1	GD05104140	100kΩ
R334	1	1	1	1	GD05104140	100kΩ
						P100-SEMICONDUCTORS
Q101	1	1	1	1	HF400451B0	F.E.T. 3SK45 B
Q102	1	1	1	1	HT305352B0	Transistor 2SC535 B or C
Q103	1	1	1	1	HT308291C0	Transistor 2SC829 C
Q151	1	1	1	1	HD20001210	Diode 1S2473 C
Q152	1	1	1	1	HD20001210	Diode 1S2473 C
Q201	1	1	1	1	HT308291C0	Transistor 2SC829 C
Q202	1	1	1	1	HT308291C0	Transistor 2SC829 C
Q203	1	1	1	1	HT308291C0	Transistor 2SC829 C
Q204	1	1	1	1	HD10003020	Diode 20A90M
Q205	1	1	1	1	HD10003020	Diode 20A90M
Q206	1	1	1	1	HC10009020	IC AN7000
Q207	1	1	1	1	HT308291C0	Transistor 2SC829 C
Q208	1	1	1	1	HD10003020	Diode 20A90M
Q209	1	1	1	1	HD20001210	Diode 1S2473C
Q210	1	1	1	1	HT308281D0	Transistor 2SC828 S
Q211	1	1	1	1	HT308281D0	Transistor 2SC828 S
Q212	1	1	1	1	HT107222A0	Transistor 2SA722 S or T
Q214	1	1	1	1	HD10003020	Diode 20A90M
Q301	1	1	1	1	HT308281D0	Transistor 2SC828 S
Q302	1	1	1	1	HT308281D0	Transistor 2SC828 S
Q303	1	1	1	1	HT308281D0	Transistor 2SC828 S
Q304	1	1	1	1	HT308281D0	Transiitor 2SC828 S
Q305	1	1	1	1	HT107222A0	Transistor 2SA722 S or T
Q307	1	1	1	1	HD20001210	Diode 1S2473 C
Q308	1	1	1	1	HD30023090	Zener WZ-071
Q311	1	1	1	1	HT107222A0	Transistor 2SA722 S or T
						P100-FILTERS
F151	1	1	1	1	FF10045200	Ceramic AM C.F
F201	1	1	1	1	FF11070050	Ceramic FM C.F. SFE 10.7MD1
F202	1	1			FF11070050	Ceramic FM C.F. SFE 10.7MD1
F202			1	1	FF11070130	Ceramic FM C.F. SFE 10.7MS3G
F203	1	1			FF11070050	Ceramic FM C.F. SFE 10.7MD1
F203			1	1	FF11070130	Ceramic FM C.F. SFE 10.7MS3G

● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						P100-COILS
L101	1	1	1	1	LA12028040	Ant. Coil FM
L102	1	1	1	1	LA12028050	Ant. Coil FM
L103	1	1	1	1	LO12036010	OSC Coil FM
L104	1	1	1	1	LI10016010	I.F.T. FM
L105	1	1	1	1	LC13320050	Choke Coil 3.3μH
L106	1	1	1	1	LC17510010	Choke Coil 0.75μH
L151	1	1	1	1	LC13320050	Choke Coil 3.3μH
L152	1	1	1	1	LC13320050	Choke Coil 3.3μH
L153	1	1	1	1	LO10010530	OSC Coil AM
L154	1	1	1	1	LI10010730	I.F.T. AM
L201	1	1	1	1	LI14016240	I.F.T. FM Det.
L202	1	1	1	1	LC11830020	Choke Coil 3.3μH
L203	1	1	1	1	LC23960020	Choke Coil 39mH
L204	1	1	1	1	LC12250030	Choke Coil 2200μH
L205	1	1	1	1	LC11030020	Choke Coil 10μH
L301	1	1	1	1	LS20013010	M.P.X. Coil L.P.F.
L302	1	1	1	1	LS20013010	M.P.X. Coil 10μH
						P100-JUMPERS
P111	15	15	15	15	75061001P0	Jumper 10MM
P213	1	1	1	1	75060501P0	Jumper 5MM
						P800-POWER SUPPLY CIRCUIT BOARD
P800	1	1	1	1	YF21320010	P.W. Board Power Supply
	1	1			ZZ21320010	P.W. Board Assembly
			1	1	ZZ21327010	P.W. Board Assembly
						P800-CAPACITORS
C801	1	1	1	1	EA22801690	Elect 2200μF 16V
⚠ C802	1	1	1	1	EA10802590	Elect 1000μF 25V
⚠ C803	1	1	1	1	EA22802590	Elect 2200μF 25V
⚠ C804	1	1	1	1	DK16103300	Ceramic 0.01μF ±10%
⚠ C805	1	1	1	1	DK16103300	Ceramic 0.01μF ±10%
⚠ C806	1	1	1	1	DK16103300	Ceramic 0.01μF ±10%
⚠ C807	1	1	1	1	EA22702590	Elect 220μF 25V
⚠ C808	1	1	1	1	EA33701690	Elect 330μF 16V
C809	1	1	1	1	DK17103300	Ceramic 0.01μF ±10%
C810	1	1	1	1	EA10703590	Elect 100μF 35V
C811	1	1	1	1	EQ10601610	Elect 10μF 16V
C812	1	1	1	1	EA10701690	Elect 100μF 16V
C813	1	1	1	1	EA22701690	Elect 220μF 16V
C814	1	1	1	1	EA22701090	Elect 220μF 10V
C815	1	1	1	1	DK16103300	Ceramic 0.01μF ±10%
C816	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
C817	1	1	1	1	EA47601090	Elect 47μF 10V
C819	1	1	1	1	EA47601690	Elect 47μF 16V
C820	1	1	1	1	DK16103300	Ceramic 0.01μF ±10%
C821	1	1	1	1	EA10702590	Elect 100μF 25V
C822	1	1	1	1	EA22701090	Elect 220μF 10V

● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						P800-RESISTORS (All Resistors are ±5% & 1/4W)
⚠ R802	1	1	1	1	GG05331140	330Ω
⚠ R803	1	1	1	1	GD05331140	330Ω
⚠ R804	1	1	1	1	GD05100140	10Ω
R805	1	1	1	1	GD05103140	10kΩ
R806	1	1	1	1	GD05223140	22kΩ
R807	1	1	1	1	GD05334140	330kΩ
R808	1	1	1	1	GD05273140	27kΩ
R809	1	1	1	1	GD05153140	15kΩ
R810	1	1	1	1	GD05242140	2.4kΩ
R811	1	1	1	1	GD05101140	100Ω
R812	1	1	1	1	GD05100140	10Ω
R813	1	1	1	1	GA05220040	22Ω 1W
R814	1	1	1	1	GD05222140	2.2kΩ
R815	1	1	1	1	GD05151140	150Ω
R816	1	1	1	1	GD05221140	220Ω
R817	1	1	1	1	GG05560120	56Ω 1/2W
						P800-SEMICONDUCTORS
⚠ Q801	1	1	1	1	HD20015030	Diode DS135
⚠ Q802	1	1	1	1	HD20015030	Diode DS135
⚠ Q803	1	1	1	1	HD20015030	Diode DS135
⚠ Q804	1	1	1	1	HT403131D0	Transistor 2SD313 D
Q805	1	1	1	1	HT308281D0	Transistor 2SC828 S
Q806	1	1	1	1	HT308281D0	Transistor 2SC828 S
Q807	1	1	1	1	HD20001210	Diode 1IS2473 C
Q808	1	1	1	1	HD20001210	Diode 1S2473 C
⚠ Q809	1	1	1	1	HD30027090	Zener WZ-140
Q810	1	1	1	1	HD20015030	Diode DS135
Q811	1	1	1	1	HD30015060	Diode RD5.6
Q812	1	1	1	1	HT403131D0	Transistor 2SD313D
Q813	1	1	1	1	HD20015030	Diode DS135
						P800-MISCELLANEOUS
⚠ F801			1	1	FS10080800	Fuse T80mA 250V
J813			1	1	YJ08000200	Jack Fuse Holder
J814			1	1	YJ08000200	Jack Fuse Holder
P811	1	1	1	1	75061001P0	Jumper 10MM
P812	1	1	1	1	75061251P0	Jumper 12.5MM

● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						PC00-FM/AM BUFFER CIRCUIT BOARD
PC00	1	1	1	1	YK21321430	P.W. Board FM/AM Buffer
	1	1	1	1	ZZ21321430	P.W. Board Assembly
						PC00-CAPACITORS
CC01	1	1	1	1	DD10030300	Ceramic 3pF ±0.25pF
CC02	1	1	1	1	DK18102300	Ceramic 1000pF +80% −20%
CC03	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
CC04	1	1	1	1	DD11100300	Ceramic 10pF ±0.5pF
CC05	1	1	1	1	DD11100300	Ceramic 10pF ±0.5pF
CC06	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
CC07	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
CC08	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
CC09	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
CC10	1	1	1	1	DD10030300	Ceramic 3pF ±0.25pF
CC11	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
						PC00-RESISTORS (All Resistors are ±5% & 1/4W)
RC01	1	1	1	1	GD05474140	470kΩ
RC02	1	1	1	1	GD05471140	470Ω
RC03	1	1	1	1	GD05153140	15kΩ
RC04	1	1	1	1	GD05473140	47kΩ
RC05	1	1	1	1	GD05102140	1kΩ
RC07	1	1	1	1	GD05393140	39kΩ
RC08	1	1	1	1	GD05273140	27kΩ
RC09	1	1	1	1	GD05104140	100kΩ
						PC00-SEMICONDUCTORS
QC01	1	1	1	1	HF200551D0	F.E.T. 2SK55 D
QC02	1	1	1	1	HT308291C0	Transistor 2SC829 C
QC03	1	1	1	1	HD40012090	Varicap 1S2687
						PL00-DE-EMPHASIS CIRCUIT BOARD
PL00	1	1			YK21301430	P.W. Board DE Emphasis
	1	1			ZZ21301430	P.W. Board Assembly
CL01	1	1			DF15222300	Film Cap. 2200μF ±5%
CL02	1	1			DF15222300	Film Cap. 2200μF ±5%
SL01	1	1			SS02020380	Slide Switch 25μS-75μS
						PQ00-FREQUENCY COUNTER CIRCUIT BOARD
PQ00	1	1	1	1	YK21321410	P.W. Board Frequency Counter
	1	1	1	1	ZZ21321410	P.W. Board Assembly
						PQ00-CAPACITORS
CQ01	1	1	1	1	DK18102300	Ceramic 1000pF +80% −20%
CQ02	1	1	1	1	DK18473320	Ceramic 0.047μF +80% −20%
CQ03	1	1	1	1	DK18102300	Ceramic 1000pF +80% −20%
CQ04	1	1	1	1	DD15331370	Ceramic 330pF ±5%
CQ05	1	1	1	1	DK18102300	Ceramic 1000pF +80% −20%
CQ06	1	1	1	1	DK17103300	Ceramic 0.01μF
CQ07	1	1	1	1	DD15270370	Ceramic 27pF ±5%
CQ08	1	1	1	1	DD15270370	Ceramic 27pF ±5%
CQ09	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%
CQ10	1	1	1	1	EA47601090	Elect 47μF 10V

● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						PQ00-RESISTORS (All Resistors are ±5% & 1/4W)
RQ01	1	1	1	1	GD05103140	10kΩ
RQ02	1	1	1	1	GD05471140	470Ω
RQ03	1	1	1	1	GD05332140	3.3kΩ
RQ04	1	1	1	1	RA01030260	Trimming 10kΩ
RQ05	1	1	1	1	RA01030260	Trimming 10kΩ
RQ06	1	1	1	1	GD05223140	22kΩ
RQ07	1	1	1	1	GD05212140	2.2kΩ
RQ08	1	1	1	1	GD05563140	56kΩ
RQ09	1	1	1	1	GD05104140	100kΩ
RQ10	1	1	1	1	GD05104140	100kΩ
RQ11	1	1	1	1	GG05390120	39Ω
RQ12	1	1	1	1	GD05223140	22kΩ
						PQ00-SEMICONDUCTORS
QQ01	1	1	1	1	HC10003370	IC DS8629
QQ02	1	1	1	1	HC10036030	IC LC7252
QQ03	1	1	1	1	HT107332B0	Transistor 2SA733 Q or R
QQ04	1	1	1	1	HD20001210	Diode 1S2473 C
QQ05	1	1	1	1	HD20001210	Diode 1S2473 C
QQ06	1	1	1	1	HD20001210	Diode 1S2473 C
QQ07	1	1	1	1	HD20001210	Diode 1S2473 C
QQ08	1	1	1	1	HD20001210	Diode 1S2473 C
QQ09	1	1	1	1	HD20001210	Diode 1S2473 C
QQ11	1	1	1	1	HQ30502410	Fluorescent Tube 7-LT-02
						PQ00-MISCELLANEOUS
LQ01	1	1	1	1	LC11540050	Choke Coil 150μHH
LQ02	1	1	1	1	LC13320050	Choke Coil 3.3μH
LQ03	1	1	1	1	LC13320050	Choke Coil 3.3μH
PQ11	2	2	2	2	75061001P0	Jumper 10MM
XQ01	1	1	1	1	XB107001L0	Cristal 4.000MHz
						PQ01-FREQUENCY COUNTER SUB CIRCUIT BOARD
PQ01	1	1	1	1	YK21321420	P.W. Board Frequency Counter Sub.
						PS01-SWITCH & METER CIRCUIT BOARD
PS01	1	1	1	1	YK21301410	P.W. Board Switch & Meter
	1	1	1	1	ZZ21322410	P.W. Board Assembly
						PS01-CAPACITORS
CS01	1	1	1	1	EA47700690	Elect 470μF 6.3V
CS02	1	1	1	1	EA10601690	Elect 100μF 16V
CS03	1	1	1	1	EA47405090	Elect 0.47μF 50V
CS04	1	1	1	1	EA22505090	Elect 2.2μF 50V
CS05	1	1	1	1	EA33405030	Elect 3.3μF 50V
CS06	1	1	1	1	EA47601090	Elect 47μF 10V
CS07	1	1	1	1	EA22601090	Elect 22μF 10V
CS08	1	1	1	1	DK17103300	Ceramic 0.01μF ±20%

● (U) for U.S.A. ● (N) for Europe
● (C) for Canada ● (A) for Australia

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						PS01-RESISTORS
RS03	1	1	1	1	GD05681140	680Ω
RS04	1	1	1	1	GD05153140	15kΩ
RS05	1	1	1	1	GD05153140	15kΩ
RS06	1	1	1	1	GD05104140	100kΩ
RS07	1	1	1	1	GD05152140	1.5kΩ
RS08	1	1	1	1	GD05470140	47Ω
RS09	1	1	1	1	GD05221140	220Ω
RS10	1	1	1	1	GD05223140	22kΩ
RS11	1	1	1	1	GD05223140	22kΩ
RS12	1	1	1	1	GD05222140	2.2kΩ
RS13	1	1	1	1	GD05105140	1MΩ
RS14	1	1	1	1	GD05105140	1MΩ
RS15	1	1	1	1	GD05474140	470kΩ
RS16	1	1	1	1	GD05104140	100kΩ
RS17	1	1	1	1	GD05104140	100kΩ
RS18	1	1	1	1	GD05104140	100kΩ
RS19	1	1	1	1	GD05474140	470kΩ
RS20	1	1	1	1	GD05104140	100kΩ
RS21	1	1	1	1	GD05104140	100kΩ
RS22	1	1	1	1	GD05332140	3.3kΩ
RS23	1	1	1	1	GD05104140	100kΩ
RS24	1	1	1	1	GD05103140	10kΩ
RS25	1	1	1	1	GD05184140	180kΩ
RS26	1	1	1	1	GD05102140	1kΩ
RS27	1	1	1	1	GD05682140	6.8kΩ
RS29	1	1	1	1	GD05222140	2.2kΩ
RS30	1	1	1	1	GF05680120	68Ω 1/2W
						PS01-SEMICONDUCTORS
Q001	1	1	1	1	HD20001210	Diode
QS01	1	1	1	1	HC10003090	IC NJM4558 D JRC
QS02	1	1	1	1	HD10001050	Diode 1N60
QS03	1	1	1	1	HF20030 1C0	F.E.T. 2SK30A Y
QS04	1	1	1	1	HT309452A0	Transistor 2SC945 Q or R
QS05	1	1	1	1	HT309452A0	Transistor 2SC945 Q or R
QS06	1	1	1	1	HT309452A0	Transistor 2SC945 Q or R
QS07	1	1	1	1	HD30029090	Diode WZ090
QS08	1	1	1	1	HT309452A0	Transistor 2SC945 Q or R
QS09	1	1	1	1	HT309452A0	Transistor 2SC945 Q or R
QS10	1	1	1	1	HT107332B0	Transistor 2SA733 Q or R
QS11	1	1	1	1	HD30009060	Zener RD6.2
						PS01-MISCELLANEOUS
PS11	20	20	20	20	75061001P0	Jumper 10MM
SS01	1	1	1	1	SP06040060	Push Switch AM, FM, Muting/Mono, Survo SW

REF. DESIG.	Q'TY U	C	N	A	PART NO.	DESCRIPTION
						PY00-STEREO SURVO LED CIRCUIT BOARD
PY00	1	1	1	1	YK21321440	P.W. Board Stereo Survo Led
	1	1	1	1	ZZ21321440	P.W. Board Assembly
QY01	1	1	1	1	HI10004030	L.E.D. Survo Indicator
QY02	1	1	1	1	HI10008030	L.E.D. Stereo Indicator
						PZ01-POINTER CIRCUIT BOARD
PZ01	1	1	1	1	YK21301420	P.W. Board Pointer
	1	1	1	1	ZZ21301420	P.W. Board Assembly
VZ01	1	1	1	1	IN10080460	Pointer Lamp

W01-99	Assembly and Wiring
T01-99	Adjustment
X01-00	Correction

11. TECHNICAL SPECIFICATIONS

[FOR U.S.A. & CANADIAN MODEL ONLY]

AM/FM TUNER SECTION

Sensitivity
- IHF Usable (Mono) . . . . . 10.8 dBf (1.8μV)
- IHF 50 dB Quieting (Mono) . . . . . 14.2 dBf (2.8μV)
- (Stereo) . . . . . 37.3 dBf (40μV)

Quieting Slope (Mono)
- RF Input for 30 dB Quieting . . . . . 8.75 dBf (1.5μV)
- Quieting at:
  - 20 dBf (5.5μV) . . . . . 55 dB
  - 25 dBf (10μV) . . . . . 60 dB
  - 40 dBf (55μV) . . . . . 73 dB
  - 65 dBf (1000μV) (also S/N ratio) . . . . . 75 dB

Quieting Slope (Stereo)
- Quieting at:
  - 30 dBf (17μV) . . . . . 40 dB
  - 40 dBf (55μV) . . . . . 52 dB
  - 50 dBf (173μV) . . . . . 60 dB
  - 65 dBf (1000μV) (also S/N ratio) . . . . . 68 dB

Distortion, Mono and (Stereo), at 65 dBf
- 100 Hz 0.2% (0.3%)
- 1000 Hz 0.15% (0.25%)
- 6000 Hz 0.2% (0.4%)

Hum and Noise at 65 dBf (1000μV)
- Mono . . . . . 72 dB

Frequency Response 30 Hz to 15 kHz
- Mono and Stereo . . . . . +0.2, −1.0 dB

Capture Ratio at 65 dBf (1000μV) . . . . . 1.0 dB
Alternate Channel Selectivity . . . . . 62 dB
Spurious Response Rejection . . . . . 90 dB
Image Response Rejection . . . . . 50 dB
IF Rejection (Balanced) . . . . . 90 dB
AM Suppression . . . . . 50 dB
Stereo Separation 1000 Hz . . . . . 45 dB
Subcarrier Rejection . . . . . 60 dB
AM Usable Sensitivity (IHF) 20μV
AM Distortion (THD) at 30% Modulation 1.0%
AM Signal-to-Noise Ratio . . . . . 50 dB

GENERAL

Power Requirements . . . . . 120V AC, 60 Hz
Power Consumption at rated output, both channels operating 12W
Dimensions
- Panel Width . . . . . 416 mm (16-3/8 inches)
- Panel Height . . . . . 146 mm (5-3/4 inches)
- Depth . . . . . 243 mm (9-9/16 inches)

Weight
- Unit alone . . . . . 5.3 kg (11.66 lbs)
- Packed for shipment . . . . . 6.3 kg (13.86 lbs)

[FOR EUROPEAN MODEL ONLY]

FM TUNER SECTION

Frequency Range	87.5 ~ 108 MHz
Usable Sensitivity 40 kHz Deviation, 98 MHz	
Mono S/N 26 dB	1.5μV
Stereo S/N 46 dB	48μV
Alternate Channel Selectivity 98 MHz, ±300 kHz	60 dB
Image Response Rejection, 98 MHz	55 dB
IF Rejection, 98 MHz	90 dB
Spurious Response Rejection, 98 MHz	100 dB
AM Suppression, 98 MHz	55 dB
Signal-to-Noise Ratio at 98 MHz	
Un-weighted Mono	70 dB
Stereo	65 dB
Weighted Mono	69 dB
Stereo	63 dB
Pilot Signal & Subcarrier Rejection	
19 kHz	65 dB
38 kHz	68 dB
Total Harmonic Distortion at 98 MHz	
Mono	0.1%
Stereo	0.2%
Frequency Response	
30 Hz ~ 15 kHz	−1.0 dB, +0 dB
Separation	
250 Hz ~ 6.3 kHz	43 dB
6.3 kHz ~ 12.5 kHz	39 dB
Channel Balance	0.2 dB
Output Voltage, 1 kHz	750 mV
Output Impedance, 1 kHz	4.3 k ohms
Acceptable Load Impedance, 1 kHz	47 k ohms
Antenna Terminals	
Balanced	300 ohms
Unbalanced	75 ohms

MW TUNER SECTION

Frequency Range	525 ~ 1630 kHz
Usable Sensitivity 26 dB S/N 30% Mod., 1 MHz	25μV
Selectivity 1 MHz, ±9 kHz	46 dB
Image Rejection, 1 MHz	50 dB
IF Rejection, 1 MHz	45 dB
Spurious Response Rejection, 1 MHz	37 dB
Signal-to-Noise Ratio, 1 MHz	50 dB
Frequency Response 1 MHz, ±3 dB	32 Hz ~ 2.1 kHz
Total Harmonic Distortion, 1 MHz	0.55%

GENERAL

Power Requirements	220V ~ 50 Hz
(N version is featuring an external voltage selector for use on 110 V. Other versions can be converted by a qualified technician to operate on 240 V.)	
Power Consumption	10 W
Semiconductor Complement	
Integrated Circuits	4
Transistors	27
Diodes	31
Field Effect Transistors	3
Dimensions	
Panel Width	416 mm (16-3/8 inches)
Panel Height	146 mm (5-3/4 inches)
Depth	243 mm (9-9/16 inches)
Weight	
Unit Alone	5.3 kg (11.6 lbs)
Packed for shipment	6.3 kg (13.8 lbs)

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